



— hans eisencck

ENVIRONMENT ONTARIO LEGACY

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"Funny, I don't remember him from the bus.!" Environment Minister George Kerr recently left the Legislature at Queen's Park briefly to join the children at a makeshift classroom on the grounds of Toronto City Hall. Ministry summer students Marj Weir (left) and Elaine Sandoe demonstrate some of the teaching aids of the Envirovan, a specially-outfitted educational vehicle. The occasion was the kick-off of Metro Toronto's Environment Week held the end of May and as recorded here it's also a special occasion for LEGACY. The photo marks the first use of full color in our more than four-year history.

Lakes cleanup

As a result of intensive development of pollution control facilities, about 94 per cent of municipal sewage from serviced land in Ontario gets adequate treatment, according to Environment Minister George Kerr.

In a recent speech to the Canadian Water Resources Association on Great Lakes water quality, Mr. Kerr said an estimated \$400 million in provincial and federal funds has been committed for sewage construction in Ontario to meet the schedules of the Canada - United States agreement.

The agreement, signed in April, 1972, involves 11 governments bordering the Great Lakes which have agreed to undertake measures to improve water quality and prevent further pollution. "It is both an expression of concern and a blueprint for action," said

Mr. Kerr.

Outlining Environment Ontario programs affecting the Great Lakes, Mr. Kerr said, "Ontario's industrial waste control program has advanced to the point where minimum national levels of control are generally in effect and improvements in waste treatment are now being made to meet local water quality needs."

Mr. Kerr reported that Environment Ontario staff are working with industry and Ontario Hydro on a province-wide inventory of PCB supplies and use of this contaminant in order to minimize the possibilities of future discharge. Last year the Ministry analyzed about 2,000 samples of fish for PCB content. This year, he said, 4,000 fish samples and 4,000 water, sediment and air samples will undergo laboratory analysis.



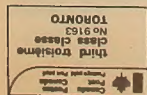
Habitour welcomed

Wednesday June 16, Environment Ontario Minister George Kerr hosted a reception for 49 Habitat delegates visiting Toronto as part of a post-Habitat study tour. The delegates were representative of a large variety of countries such as Australia, Trinidad, the Philippines, the U.S.S.R., Singapore, Bangladesh, Greece and Peru. The visitors were officially welcomed at Ontario Place by representatives of the Ontario government and the governments of the city and Metro Toronto. Here, Mr. Kerr is seen greeting H.R.H., prince Masitsela, the Minister of Local Administration in the Kingdom of Swaziland. Later, in an address to the Ontario Legislature, Mr. Kerr said that in his opinion, the Habitat conference was an achievement in international relations leading to discourse and understanding. "The conference provided a positive forum for the consideration of many issues which we face here in Ontario and which will be major dilemmas of the future for virtually all of the 135 nations represented at Habitat." He referred to principal issues of providing clean water to more than 85 per cent of the world's population, the question of nuclear development as a source of energy and the problems of a world population that seeks to overcrowd its cities and that will double in the next 30 years.

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University of Toronto Library,
Serials Department,
Toronto 101, Ont.



Thunder Bay meetings with Environment Ontario

Pulp and paper face new controls

In a series of meetings with representatives of the pulp and paper industry, Environment Minister George Kerr and Ministry staff are working out new programs and priorities in pollution control.

Mr. Kerr announced the Ministry's intentions to establish definite programs and timetables on a mill-by-mill basis in an address to the Lakehead Conservation Authority annual meeting late in February.

"When we speak of the pulp and paper industry, we're using a blanket term to cover the production of tissue, printing and writing paper, linerboard, boxboard, corrugated card, kraft pulp and newsprint — operations which differ greatly in nature and impact on their communities," Mr. Kerr told his Thunder Bay audience.

tainting and some forms of air pollution," Mr. Kerr said.

"During the past year, some of the water pollution effects from the pulp and paper industry became obvious by their absence right here in Thunder Bay. He referred to water quality improvements during a prolonged shutdown of the mills.

Scientific testing of Thunder Bay water shows organic contamination at some points reduced by as much as 98 per cent. Total phosphorus levels in some water samples taken by Ministry staff showed reductions by as much as 82 per cent, turbidity was lessened by as much as 83 per cent and dissolved oxygen levels showed improvements of from 15 to 57 per cent at various points.

He used these changes in

committee for pollution abatement research.

"We can all expect to see this investment in research start to return some dividends in the pulp and paper industry," Mr. Kerr said.

Over the past 15 years approximately \$70 million has been spent by the industry on facilities for the removal of suspended solids. A further \$30 to \$35 million has been

spent over the same time period on related pollution control activities.

"In total, therefore, over the period from 1960 to the present, the industry has spent in the order of \$115 to \$120 million on pollution control in the province of Ontario," Mr. Kerr said.

"I do not intend to zero-in on the pulp and paper companies in order to literally

club them into taking on an expensive program in environmental protection which, at this time, the industry collectively can ill afford," Mr. Kerr said.

"I do intend, however, to set objectives for the industry and a timetable and rate of expenditure for the fulfillment of these objectives which the industry can handle in stride."

Ontario government appoints first Environmental Assessment Board

Ontario's first Environmental Assessment Board was established in April with Premier William G. Davis' announcement of the appointment of 14 members.

The board will play a vital role in the implementation of the Environmental Assessment Act, 1975, under the Ministry of the Environment.

The act received third reading in the Ontario Legislature in July, 1975 and the sections relating to the Environmental Assessment Board were recently proclaimed by the Lieutenant-Governor.

The remaining sections of the act, which are expected to be proclaimed shortly, will require that the proponent of an undertaking, which may have a significant effect on the natural environment, submit an environmental assessment of that undertaking for approval. Ministry of the Environment staff, in consultation with the other Ministries involved, will prepare a review of the assessment and the documents will be available for public scrutiny. The Minister of the Environment may make a decision on the acceptability of the assessment. If the Minister considers it advisable or if he receives a legitimate request for a hearing, he will refer the

matter to the board. The general application of the act will be phased in over a period of time, with its first application to projects of the Government of Ontario or its agencies.

The board, which was appointed at this time to expedite the implementation of the act, will also assume all of the ongoing activities of the Environmental Hearing Board as prescribed under the Environmental Protection Act, 1971 and the Ontario Water Resources Act.

Mr. Davis announced appointment of David S. Caverly, of Toronto, as the new Board's first chairman and Eleanor Lancaster, St. Catharines, as vice-chairman.

Members of the board are: Dr. Donald Chant, Toronto; Kelly Culin, Flamboro; David Dehler, Ottawa; Gil Faries, Moose Factory; Raoul W. Gagner, Paincourt; Keith Laver, Mississauga; Dr. Carl A. Martin, Milton; James Meakes, Sudbury; D. Aubrey Moodie, Richmond; David C. Morton, Brockville; John Root, Orton; and Harry Smith, Ajax.

Mr. Caverly, who was born and educated in Aylmer, Ontario, has been engaged in environmental work throughout his working career. After receiving his B.A.Sc. in Civil Engineering

and M.A.Sc. in Public Health Engineering from the University of Toronto in 1946, he joined the Ontario Department of Health's sanitary engineering division as a district engineer.

In 1957 when the Ontario Water Resources Commission was formed, Mr. Caverly was one of the Health staff transferred to the new agency to develop a comprehensive water management and pollution control program for the province.

In 1963, Mr. Caverly became general manager of the OWRC and served in that capacity until 1972 when the OWRC merged with the Department of the Environment to form the present Ministry and Mr. Caverly became the assistant deputy minister in charge of water quality. Late in 1973, he was appointed the first full-time chairman of the province's Environmental Hearing Board. This independent government agency conducted public hearings on the construction or expansion of water and sewage treatment facilities and waste disposal sites and other issues of environmental concern under the authority of the Ontario Water Resources and the Environmental Protection Acts.



Student Lorraine Fortier conducts Ministry sewage sampling at pulp mill in Kapuskasing. — dennis nagata

"At one end of this spectrum we have tissue mills, one of which is a very new, very efficient and very clean operation with virtually no pollution discharge. At the other end, we have the sulphite-process mills which produce newsprint," Mr. Kerr said.

He stressed the industry's importance to northern Ontario and to all Ontario. "The industry is a major landlord, a principal employer, and virtually every resident of our northland has close friends engaged in some capacity within this industry."

The people responsible for the growth and direction of this industry realize its role in Ontario and Canadian affairs and their responsibility of corporate citizenship, he said. One impact this industry has on the natural environment is the generation of 20 per cent of Ontario's total industrial waste discharge by volume.

"In my meetings with the men of the industry, we have discussed the water pollution problems associated with the production of pulp and paper — the discoloration of water, the foam, the organic discharges which deplete dissolved oxygen levels in some watercourses, and the fish

water quality to illustrate the extent of the impact which industrial operations of this scale have on the natural environment in this province and the need for further advances in pollution control across Ontario.

Thirty-one pulp and paper mills in Ontario discharge effluent directly into watercourses; in addition there are mills which discharge into municipal sewage systems for treatment. All but seven have reached the general objective of 50 parts per million for suspended solids set by Ontario in 1965. Eleven mills are active with water pollution control programs that go beyond these basic corrective measures.

Because of the diversity in nature, size and scope within the pulp and paper industry, a sweeping, generalized approach to pollution control is neither practical nor desirable, Mr. Kerr said.

Over the past five years, an extensive program of research has been underway into the pollution problems of this industry. Much of this research has been stimulated by the federal government under the program of the



Environment Minister George Kerr (seated at table) greets Environmental Assessment Board members, left to right, standing: Raoul Gagner, Paincourt; Aubrey Moodie, Richmond; Harry Smith, Ajax; David Morton, Brockville; Dave Caverly, Toronto; James Meakes, Sudbury; Kelly Culin, Flamboro. Left to right, seated: Gil Faries, Moose Factory; Keith Laver, Mississauga; Eleanor Lancaster, St. Catharines; John Root, Orton. Absent: Dr. Donald Chant, Toronto; David Dehler, Ottawa; Dr. Carl Martin, Milton. Mr. Caverly is chairman of the Assessment Board.

CONFERENCES

A simpler index urged by APCA

By ANSON RAYMOND
Information Services
Branch

One of the recurring themes at the Ontario Section, Air Pollution Control Association's (APCA) recent annual meeting was the need for a simplified Air Pollution Index and the necessity for more public knowledge and understanding of the ambient air environment.

"In spite of the fact that a large volume of data is published annually on air quality, the public is not able to interpret ppm's (parts per million) and micrograms per cubic meter of several dozens of various contaminants monitored by the government agencies."

These were the words of Dr. Frank Frantisk, supervisor, technology development and appraisal section, air resources branch, Environment Ontario, in a paper entitled "The Success of the Ontario Air Pollution Index" at the APCA Specialty Conference on Air Quality: Criteria, Standards and Indices, which took place at the Prince Hotel, Toronto, April 4-6. About 200 delegates attended from U.S. and Canadian sections of the association.

It was the second "specialty conference" of the international association to be held in Canada.

This year the conference

was sponsored jointly by the Ontario Section, APCA and the TE-1 Bio-Medical Effects Committee.

APCA is a nonprofit technical and educational organization dedicated to advancing the science and art of air pollution control, which was founded in Pittsburgh, Penn. in 1907, and whose 6,600 members today include engineers, scientists, pollution abatement enforcement officials, medical doctors, consultants, manufacturers of control equipment, and industrial organizations.

Environment Minister George Kerr opened the two-day conference telling delegates that the APCA "was quick to recognize air pollution as a major by-product of our 20th century industrial technology, and over the years it has won wide recognition for its work."

"When the government's Air Pollution Index was established in 1970, Ontario was the first jurisdiction to establish a telemetered monitoring system and a uniform air pollution index for the province that would serve as an alert system and permit us to take regulatory abatement action at times when criteria are exceeded," he said.

"Since taking these initial steps, the scientific community has agreed generally that we chose the right route: that the two contaminants, SO₂



Environment Minister George Kerr (right) who opened the two-day conference, is joined here by Ministry staff solicitor Linda McCaffrey and by Dr. Eugene Kocykur, conference chairman.

and suspended particulate matter, have to date served as the best indicators of pollution in an alert system. I might add that shortly after we introduced our air pollution index the World Health Organization chose these two contaminants for close study in a worldwide surveillance program.

"The API is publicized four times daily in Toronto, Hamilton, Sudbury, Windsor, Niagara Falls and Welland, and also in Coniston, a community east of Sudbury."

"We now have over 1,000 permanent air monitoring instruments in continuous operation throughout the province, located in industrial areas which are prone to air pollution. During 1975, almost two million data points were computer-processed by our Ministry to provide air quality levels and trends in 70 areas of the province."

"...we've had tremendous improvement in air quality since the index was introduced and our cities and towns are now much below or very near to meeting the stringent air criteria set by

the province," he told delegates.

Another major concern of conference delegates was that much more research is needed to determine the health effects of various contaminants which chemically interact in the ambient air, and which would thus produce unsuspected toxic substances.

Dr. Knelson of the National Environmental Research Centre, U.S. Environmental Protection Agency, spoke of his concern about the increase in pollutant-related respiratory diseases since 1900, and in the likely increase of higher sulphate and nitrate fuel emissions in view of the current oil shortage, placing a new burden on pollution abatement as North America makes a shift in its use of fuels.

Environment Ontario solicitor, Linda McCaffrey presented a paper on the enforcement of standards, noting that it is possible to identify three distinct types of standards in the Environmental Protection Act, 1971 and its regulations. There was the traditional standard set

out in Section 14 (1) of the act and developed on the basis of the common law of nuisance; in section 6 of Regulation 15, the "black smoke" standard prescribed in section 8 (1) of Regulation 15; and the modern or scientific standard developed with respect to the known, or predictable, effects of certain contaminants at certain levels of exposure, prescribed and set forth in section 5 and Schedule 1 of Regulation 15.

Modern scientific standards were introduced in Ontario in 1967. Since that time, the list of contaminants regulated has been considerably expanded and certain standards have changed.

"Development of these standards is an ongoing process and new standards will be imposed and old ones altered as our knowledge of the potentially harmful effects of different substances, or of apparently innocuous substances acting together, and of the levels of exposure which place people, plants, animals and property at risk, grows," Mrs. McCaffrey stated.

Storm water management workshop

Backup and overflow are the risks when sewerage systems are strained to capacity. These pollution problems were the subject of the first Canadian Storm Water Management Model Workshop held recently in Toronto.

The March workshop, sponsored by the urban drainage subcommittee of

the Canada-Ontario Agreement (COA), attracted 100 participants including municipal engineers, governmental regulatory officials and consulting engineers from most Canadian provinces and the U.S.

Under study mainly was a version of the U.S. EPA Storm Water Management

Model, improved and tailored to Canadian conditions by consulting engineering firms James F. MacLaren Ltd., and Proctor and Redfern Ltd. under joint contract with COA.

Given input data on rainfall, demography and physical sewer system specifications, the computer model

calculates storm runoff, routes it through the sewer system and determines the pollution loading in receiving waters. It also indicates the treatment/storage requirements and their costs.

In addition, data on planned communities can help the model development of new sewerage systems.

An urban drainage subcommittee report presented at the workshop said that although combined sewage and surface runoff are recognized as potential sources of pollution, their significance relative to other pollution sources and the cost of implementing pollution controls in the Great Lakes Basin have not been explored.

It said that once the nature of the problem is fully identified and solution capability and cost effectiveness are determined, legislative and regulatory methods of controlling urban runoff pollution problems can be sought.

Many participants stayed on for the April 1 Storm Water Management Model Users Group Meeting of the U.S. Environmental Protection Agency held in conjunction with the workshop. The meeting focused on case histories of storm water management model studies currently underway.



Participants to the three-day workshop included, from left, Peter Hertzberg (Proctor Redfern), Grant Mills (Environment Ontario), Paul Wisner (James F. MacLaren Ltd.), Dave Walter (Environment Canada) and Don Weatherbe (Environment Ontario).

Abatement programs encouraged

Kerr tables lead report

A report on the public hearings into lead contamination in the Metropolitan Toronto area by the Environmental Hearing Board was tabled in the Ontario Legislature by Environment Minister George Kerr in early May.

While major pollution controls and constant monitoring are necessary at five Metro area secondary lead plants, there is no serious health problem related to lead, the Environmental Hearing Board reported following nine months of public hearings held during 1975.

The hearings were convened for the primary purpose of examining the 34 major recommendations of two previous environmental studies on lead.

Authority

The hearing board observed that considerable remedial work and abatement has already been carried out and it suggested the future establishment of a central research authority on matters of environmental contamination. This authority "could serve to provide the public with a source of credible information thereby helping to prevent the sounding of false alarms, as well as providing a more effective research effort."

The board reported that the high levels of lead in soil in proximity to three Toronto lead plants probably contributed significantly to the oral intake of lead by some children in these areas who developed high blood lead levels.

"Other sources of oral intake, such as leaded paints, house dust, contaminated water supplies, etcetera could not be conclusively ruled out," the report stated.

Though medical evidence was inconclusive in this regard, the board states that "on the basis of present evidence the board recommends that for any soil lead levels of greater than 3000 parts per million (dry weight) measured over the top two inches of the soil" the area be treated by either spreading a new layer of soil at least two inches in thickness over the original surface, or that the contaminated surface be paved at the company's cost.

In addition to the report of the Environmental Hearing Board Mr. Kerr also tabled the Lead Data Analysis Task Force Report, which observes that people living near the three Toronto lead processing plants run an increased risk of facing elevated lead levels in their blood. This report is based on an analysis of blood samples of 7,000 people and on environmental data collected by the Ministry of the Environment.

The Lead Data Analysis Task Force, chaired by Dr. G. K. Martin, executive director of the Ontario Ministry of Health's community health division, studied extensive data on blood lead levels and environmental lead in the vicinity of the Canada Metal Co. Ltd., Toronto Refiners and Smelters Ltd. and Eltra of Canada Ltd.

Since the problem of lead contamination emanating from five lead processing plants in the Metro area first surfaced in 1972, the Ontario Ministries of Health and Environment have conducted investigative, monitoring and abatement programs.

"A series of control orders issued to the companies has resulted in abatement improvements being undertaken at a cost to the companies of \$2.1 million to date. Also, the companies will spend another \$1 million in future, both voluntarily and in com-

plying with our control orders. This program is aimed at reducing the likelihood of any health concerns among people living near any of the three Toronto plants," said Mr. Kerr.

"It includes control orders issued against the Toronto Refiners and Smelters plant and the Canada Metal Company plant which call for extensive improvements required by my Ministry. The Eltra Canada Prestolite plant and my Ministry are working together to identify and control sources of dust at this plant. The Eltra Company has undertaken voluntary steps to control in-plant fugitive lead dust sources in an effort to reduce lead in dust-fall levels which are being monitored by Ministry staff."

Investigations into possible health and environmental effects of secondary lead smelting processes began in June, 1972 after an analysis by the Ministry of the Environment detected a high content of lead in dust which had accumulated on a backyard table near a lead smelting plant in mid-Toronto. Two studies were undertaken at the direction of the Ministries of the Environment and Health.

The first was conducted by the Working Group on Lead, which included representatives of the Ministries of Environment and Health, the Attorney-General's office and the Toronto medical officer of health. Its report, containing 14 major recommendations, was submitted in August 1974.

The second study, related to health effects, was by the Provincial Study Committee on Lead chaired by Dr. H. Locke Robertson, which was appointed by the Minister of Health. The Robertson Report, containing 20 recommendations, was submitted in October 1974.



The North Don Collector sewer — no hazard to golfers.

Covering up the hole-in-one

By BILL DODDS
Information Services Branch

On paper, the North Don-Bayview Collector sewer — a two mile stretch of 36 and 33 inch pipe — looks like any other minor servicing project for the Ontario Ministry of the Environment.

The \$1.4 million construction job is one of the first sections in 70 miles of trunk sewer involved in Environment Ontario's massive York-Durham project.

"And in many ways, this small, six-month construction job is representative of the environmental concern and considerations built into the entire York-Durham system," said C. J. K. Wilson, the Ministry's project manager.

"Virtually the full two miles of the sewer must run along a river valley, with two-thirds of it stretching across three golf courses — Toronto Ladies, Thornhill and Uplands. The entire job is almost a textbook example of work in environmentally sensitive land."

This was the challenge presented by the Ontario Ministry of the Environment and its major consultant on York-Durham, James F. MacLaren Ltd. Then the consulting firm of Knox, Martin and Kretsch was engaged to design the works and Bitini Construction Ltd. contracted for the construction.

The sewer main was to be laid with minimum environmental disruption and the land, particularly on the golf courses, was to be restored to its natural state as effectively as possible within six months.

"We started in December and, unless something goes wrong, we should have the golf course land restored by July 1, in spite of the problems which have been presented by weather conditions," said consultant Charles Kretsch.

Under the terms set out by the Ministry, after study of the area and consultation with the owners of the golf courses and other property affected, construction work was restricted to an 80-foot wide easement along the sewer right-of-way. Some small areas have been set aside for storing topsoil and for a base office of three trailers, but all construction and trucking activity is confined to this 80-foot strip.

"We started by marking off our easement with snow fencing," Mr. Kretsch said. "We also marked every tree along the route, so that we can save and protect as many as possible from destruction or damage."

The next step was to strip and store topsoil in nine piles through the golf courses, under plastic covers to prevent erosion, so that it is available for restoration when the job is complete.

Sod was pre-ordered by the Ministry for use in the restoration.

"It's special grass — Pen-cross Bent Sod — used in golf courses. The 30,000 yards ordered by the Ministry exhausted the available supply in Ontario," Mr. Kretsch said. "We had to order another 10,000 yards from Michigan."

"The construction is well along," Mr. Kretsch said, "but the real challenge is still before us — the job of putting it back together in natural condition."

And when this challenge is met, this section of the collector system is linked to three more required sections, and the land is restored to the golfers and local residents, the benefits to the community will be immediate, with relief for an existing overload on York Region's North Don sewage treatment plant and adequate provision for more housing development in the heart of the region.



The Timmins gold rush boom of 1909 is long over. And what do you do when the veins run thin? Many mine owners have simply picked up and left. The frequent result is a pollution problem. Here a contractor clears up the drilling bits and debris from the Buffalo Ankerite mine, dormant for 28 years.

YOUTH ACTIVITIES

David's World

On the 26th day the stench and the scum disappeared from the water and 12-year-old David Eijnsenk was ready to give his world another chance.

David's world is called an ecosystem, a kind of self-supporting aquarium which is finding increasing use in classroom studies.

The idea behind the ecosystem is to bottle a slice of life from a living stream or pond and record the changes.

Living species will rise and then die-off making way for other species. New balances of life will evolve constantly, requiring no outside sustenance except the energy from the sun.

David's mother says she likes the ecosystem because it's a welcome addition to the household — an attractive aquarium full of plants and animals with exotic-sounding names such as cyclops, daphnia, fairy shrimps and hydra that is constantly evolving a new appearance.

She says she also appreciates its maintenance-free operation.

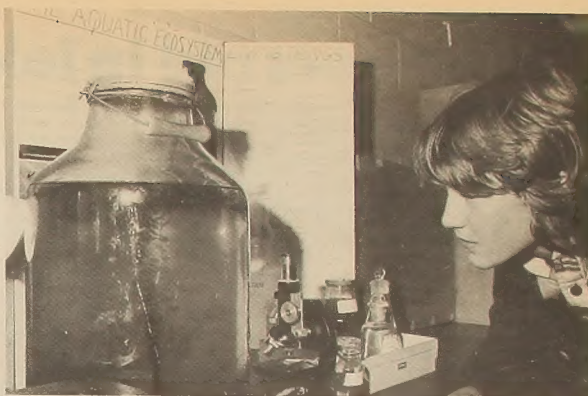
And David's dad who works for the Ontario Ministry of the Environment in Toronto likes it because it's a perpetual learning experiment for his young son, demonstrating the delicate interrelationships of living things.

Dad also admits the ecosystem has quieted his son's hints for a fancy aquarium stocked with exotic and expensive tropical fish.

For David the ecosystem is a project he took on by himself and finished by himself, a project which earned him a prize at a local science fair.

The following is a brief outline of how to go about building an ecosystem. Detailed instructions are available by writing the Ontario Ministry of the Environment, Information Services Branch, 135 St. Clair Avenue West, Toronto, M4V 1P5.

Find the biggest bottle you can, preferably one with a lid,



— hans eijnsenk

David and his ecosystem: a self-supporting aquarium with an environmental message.

and clean it thoroughly but without using soap. Visit a slow-flowing stream or pond, places where the growth of aquatic plants indicates a variety of plant and animal life.

Scoop two or three inches of the bottom sediment into the bottle and take a sample of the aquatic plants. Use a kitchen sieve as a net to catch tiny aquatic organisms that live among the plants. Fill the

bottle three-quarters full with water from the site and allow the contents to sit in sunlight for a day before letting it settle overnight.

You'll likely have a variety of animal life in your sample but you can add guppies purchased in male-female

pairs or snails if you wish.

After a few weeks when the system is functioning the bottle can be sealed by melting paraffin wax and applying it around the lid or stopper so that no air can enter or leave.

Beating the blahs

Environment Ontario may have a remedy for the most serious childhood affliction of the summer — boredom.

The Ministry now distributes, free of charge, 8 x 11 inch mini-posters for those "I don't have anything to do" days. There are now three available.

One depicts The Talking Frog, a litter container used at fairs and exhibits that thanks children for feeding garbage in its cavernous mouth. Elementary school-aged children can have fun coloring the poster once they've wrestled with mysteries such as: Just what color is a frog's tongue anyway?

For the most advanced, there's another poster that can be colored in one thumb at a time. Children can fill the poster with the inked thumbprint of the people they know who are concerned about pollution. Ideas on how to reduce pollution will accompany the autographed thumb prints and when complete the poster can be displayed on a classroom bulletin board or sent to local politicians or

businessmen.

The same principle is involved in another poster with the invitation to **HELP STAMP OUT POLLUTION**.

In the outline of a footprint, kids can paste used postage stamps from the mail of their family and friends.

To remove the stamps they tear off the small section of the envelope which carries the stamp and place it in a bowl of warm water until the stamp loosens in about five or 10 minutes. Once dry the stamps can be cut and glued to fit exactly the footprint outline.

And, once again, if the children are willing to part with the decorative poster they can send it to their school or to local officials and businessmen.

Anyone interested in any or all of these posters can write: Educational Resources Co-ordinator, Information Services Branch, Ontario Ministry of the Environment, 135 St. Clair Avenue West, Toronto M4V 1P5.

Experience '76 underway

Ontario's Ministry of the Environment, with the Ontario Youth Secretariat's Experience '76, will employ 330 students this summer in a variety of environmental research projects with an estimated cost of \$560,000.

The 69 projects, chosen from 117 submissions from educational institutions and recognized environmental agencies, will provide information on pollution, energy conservation and environmental health.

The projects include a Canadian Environmental Law Research Foundation study into the scientific, medical, legal and political implications of data designed to control environmental health hazards; a study into the amount of asbestos and pH alkalinity in Thunder Bay waters; and research into the use of mulch in the protection of new growth in barren or damaged areas in Sudbury.

Environment goes east

In early April, three members of the Ministry staff were off to the Maritimes to conduct two one-week training courses at the request and expense of the New Brunswick and Nova Scotia provincial governments.

Both courses were based on the Ministry's Basic Gas Chlorination Workshop, designed for the operators of water and wastewater sewage treatment plants. The course content consists of chlorine theory — the main purpose as well as other uses in the treatment plant; the safety aspect of chlorine; the performance of lab tests; the theory of chlorinator operation; and maintenance and troubleshooting.

Alan Cooper, curriculum development officer with the training and certification section, who co-ordinates the operator-oriented courses and workshops offered in Ontario, acted as manager of the trip and lectured on chlorination theory and lab tests.

Don Ellis, also with the training section, was responsible for the safety and first aid aspects of the workshop. Mr. Ellis has had several years of experience in this field, both as a safety officer with Environment Ontario and as a qualified St. John Ambulance first aid instructor.

The third member of the team was Dave Woodside of



Environment Ontario staff, Al Cooper (left), Dave Woodside and Don Ellis were invited to the Maritimes to conduct training courses for the operators of water and wastewater sewage treatment plants.

the Ministry's pollution control branch. Before accepting his present position, Mr. Woodside was a maintenance and service representative for one of the major chlorinator manufacturers. He, therefore, conducts the lectures on the chlorination equipment, as well as providing instruction for the troubleshooting and maintenance hands-on workshop.

The Basic Gas Chlorination Workshop has been one of the most popular courses offered by Environment Ontario. Since its commencement in 1971, over 600 operators have completed it. Some coming to Toronto from as far away as Halifax, Frobisher Bay and Edmonton.

The Ministry has been told that the maintenance on chlorinators required by outside contractors has dropped considerably since the commencement of the courses.

Other Ministry courses available for water and wastewater treatment operators are:

Basic Water, Basic Sewage, Activated Sludge, and Surface Water Treatment.

The Chlorination Workshop for the Nova Scotia operators was held at the Mill Cove Water Pollution Control Plant at Bedford, a suburb of Halifax.

In New Brunswick there were 37 trainees and the course was held at the University of New Brunswick. Once again interest was high and the Ontario group had a busy but interesting week. The Province of Prince Edward Island had four representatives on each of the two courses.

The operators were particularly interested in discussing all aspects of safety, especially that dealing with entry into confined spaces, such as manholes and underground lift stations, and the use of fresh air packs. There was good healthy discussion on both workshops, an aspect that the training staff encourages on all of its courses and workshops.

As with courses and workshops conducted by this section in Ontario, there were daily mini-tests and a final written examination, along with an equipment hands-on test the final day.

Co-operation in pollution fight

Cottagers aid in lakes survey

By SHARON PAUL
Humber College

This summer, Environment Ontario will again survey lakes in all regions of the province, in an on-going program that has achieved excellent results in the areas so far completed. With the assistance of university and college students, Environment Ontario establishes a field office in the area to be surveyed.

Workers inspect the properties, collecting both information and water samples which will be analyzed by the laboratory.

Number of inhabitants, size and condition of the cottage, type of sewage disposal and location of privy pits, leaching pits and tile beds are all documented. Inadequacies or malfunctions in these systems are recorded and potentially hazardous systems noted.

Samples are then taken of the drinking and lake water. Control samples are taken at every fifth cottage, where the water is sampled 50 feet from the shoreline.

Research data are co-ordinated and samples analyzed at the field office to assess whether each cottage's private waste disposal facilities are adequate. If not, an Environment Ontario officer will reinspect the property to verify the findings.

Should the cottage be determined to be a pollution source, the environmental officer will inform the owner of the existing deficiencies, discuss possible corrective measures, and approve work plans. He will also arrange for inspection during and after construction.

Co-operation from the cottagers in the cottage pollution control program has been excellent: they are the ones who benefit most from improved water quality, and most are as concerned as the government about developing a harmony between man's needs and those of nature.

SELF-HELP

In fact, the cottagers' diligence and enlightened concern are basic to the success of the water purification task: so much so that in addition to the cottage pollution control

program, Environment Ontario has established a self-help program to enable cottage owners to test their own waters and determine whether corrective measures need be taken.

Cottage associations and individual cottagers are provided with all necessary instructions and equipment for water quality sam-

Environment Ontario's laboratory for analysis, following which a report is prepared and sent to the individuals participating in the survey.

WATER QUALITY

The reasons for degradation of water quality are many, and vary in



pling. This equipment includes a Secchi disc, which is a flat round disc alternating white and black quadrants attached to a graduated line. The Secchi disc is lowered into the lake water until it disappears from view and this depth is then recorded. This figure is used to calculate the extent of light penetration in a lake and hence the depth to which algae grow.

Water sampling devices are also provided to determine the chlorophyll *a* content in the lake. Chlorophyll *a*, the green pigment involved in photosynthesis, indicates the amount of algae and therefore the extent of biological activity in the lake at the time of sampling. Samples, taken at one-week intervals, are forwarded to

importance from lake to lake. A lake is a sedimentary basin which will gradually fill in and the water will become enriched with nutrients which promote nuisance weed and algae growths. This is a geological process which naturally takes thousands of years. Man accelerates the process so that some lakes can become undesirable in a few decades. To control these growths we must control the phosphorus input to the lake.

The primary cause of excess weed and algae growth, phosphorus, reaches the lake from run-off water, dust particles, human and animal wastes and fertilizers. By clearing the land around the lakeshore, we provide a more rapid run-off and subsequent erosion of the soil.

POSITIVE ACTION

The Ontario cottager cares about his lake. He wants his children to enjoy the same cool, clear swimming spots that he remembers from his own childhood. He wants his children to fish for trout and bass the way he did when he was young. Fortunately, his neighbors, like the majority of cottage owners in Ontario, share his concerns.

How can they ensure this idyllic future for their children and their children's children? By using common sense, and by being aware and informed about the causes and the solutions of water quality deterioration.

1. Preserve the natural vegetation between the cottage and the lake. The tile bed area should be exposed to the sun and the wind and should be grassed to allow the grass to use up excess phosphate. Elsewhere, leave the vegetation in as natural a state as possible. This zone of natural vegetation will act as a buffer between the cottage and its activities, and the sensitive shore region of the lake.

2. Preserve the natural shoreline. Avoid spills of gas and oil when filling outboard motors. Leave the shoreline vegetation undisturbed.

3. Check your waste disposal system. Ensure that cottage waste disposal facilities operate satisfactorily by protecting the tile bed from vehicles and snowmobiles which pack the snow and may cause freezing of the tile bed. The septic tank system should be inspected each year for damp spots or ponding of sewage and corrective action taken where necessary. Pump out the septic tank every three years.

4. Don't use excess quantities of water and don't use high phosphate detergents. Detergents for hand dishwashing and laundry contain less than five per cent phosphates by law. However, detergents for automatic dishwashers contain a high proportion of phosphates. Therefore, automatic dishwashers should be avoided for cottage use.

By following these simple procedures, the cottager can ensure that his children will enjoy the privileges of our inimitable and irreplaceable cottage country.

How about yours?

Soo Conservation Week

Focused on awareness

By GEOFF LEE
Ryerson Polytechnical Institute

The theme of environmental awareness highlighted Sault Ste. Marie's fourth annual conservation week, May 10-15, at Station Mall.

The Sault Ste. Marie Conservation Authority sponsored the week's displays and contests. Community industries and federal-provincial agencies were invited to exhibit a host of pollution control devices and techniques.

Environment Ontario officers helped co-ordinate the program and solicited prizes from local merchants for a high school essay 'solution to pollution' contest. Cathy

Sawyer, a grade 11 student won the top prize, a dinner for two. Second and third prizes were a pair of blue jeans and an hour's spree in a penny arcade.

Jim Harmer of the Ministry's Sault Ste. Marie office said he was optimistic about public interest in Environment Ontario's work. "Our major accomplishment was in letting the public know that we are a separate Ministry from the Ministry of Natural Resources."

"We feel that many people now know there is a district office here and they are informed about the programs we're involved with."

Environment Ontario's displays included a specially equipped microbiology lab and free automobile emissions control tests were conducted by staff from Environment Ontario's mobile test van. The Ministry's Great Lakes research vessel, Monitor II docked near the mall on Wednesday to receive visitors.

A self-contained humus type toilet, a lamprey eel tank from Environment Canada's Great Lakes Fisheries Research and exhibits from the provincial Ministries of Housing, Agriculture and Natural Resources were also on display.



Ministry summer student Geoff Lee distributes pamphlets from the Environvan, a specially-outfitted Environment Ontario educational vehicle.

Lakeshore capacity

By GEOFF LEE
Ryerson Polytechnical Institute

A few years ago, families used to invite neighbors and relatives to visit them at their cottages. Not because they particularly wanted the extra company but because a cottage could be a lonely place. No more. From the growing volume of traffic on a Friday night in the summer, it seems as if almost everyone has access to a lakeshore property.

Unfortunately, in some areas, buildings sprang up so fast that little thought was given to the ability of a lake to handle the increasing number of people, their waste disposal systems and their recreational activities. The result—a deterioration in the water quality, excess weed growth and diminishing recreational use.

However, a joint lakeshore capacity study involving the Ministries of Environment, Natural Resources and Housing which should prevent such problems in the future, is now in its second year. When complete, the five-year study will provide a method of measuring the capacity of land around a lake to support development and will also be able to predict the effects of the development.

Scientists from the limnology and toxicity section of Environment Ontario's water resources branch are conducting water enrichment tests in lakes to define the effects of natural and artificial influences.

Dr. Tom Brydges, supervisor of the section, said the first step was to find the quantity of natural effluents entering a lake. "Since the study aims to find out what happens when artificial inputs are added to a lake, a monitoring station has been set up to establish a detailed nutrient content or nutrient budget flow into a lake. The main problem is finding an undeveloped lake to use as a bench mark for comparative nutrient tests with more developed lakes. Almost every lake is affected by development to some degree," he said.

A base camp and support lab was stationed in Bracebridge earlier this year.

Environment Ontario microbiologists will also employ the methodology concepts approved by a University of Toronto contract study. Alan Burgy said, "the University of Toronto had been developing methodology that interested us at the time the lake capacity study was announced. Without the contract, it would have taken us two years to develop those techniques," he said.

One concept tested by the

contract was a microbiology indicator, useful in identifying disease-carrying organisms.

"We are also working closely with Gravenhurst area doctors who supply us with swabs used to treat ear infections," said Mr. Burgy. "We use these swabs in epidemiology tests to find a link between ear infections and specific lakes."

Habitat ecologist, Dave Euler from the Ministry of Natural Resources said his section is measuring changes in wildlife as human activity increases. Using a tree diversity index, the percentage of ground covered by vegetation can be calculated.

The maximum quantity would be 300 per cent, a figure representing the three forest layers of shrubs, small trees, and canopy trees. "This diversity index is a quantitative way of measuring the habitat. Cottage development could destroy the middle vegetation level, and affect wildlife species dependent on that level," he said.

Field studies on birds and vegetation will continue this summer. Mr. Euler said mammals will be studied later. Reptiles may be added if funds are available. A computer will be used to analyze the research.

The fish and wildlife research is geared to finding a relationship between cottagers and fish stocks. Dr. Al McCombie, also from Natural Resources, said surveys are conducted to get an idea of the annual fish harvest.

"We want to see if the fish catch is related to the number and types of anglers," said McCombie. "Interviewed anglers inform us of the amount of time spent fishing, where they fish and where they are from."

Survey teams use a boat equipped to measure and weigh fish caught by private anglers.

A morphoedaphic index, a formula that relates the poundage of fish caught to the fertility of water and mean lake depth is used to help gather relevant data.

The \$600,000 a year, lake study, initially funded and co-ordinated by the Ministry of Treasury, Economics and Intergovernmental Affairs, is now under the auspices of the Ministry of Housing.

The Ministry of Housing has a twofold purpose: to compile and evaluate all research study data and to conduct a sociological study on the effects of recreation on various sized lakes.

A final comprehensive report on the lake capacity study should be tabled within five years.



Boaters

Sewage retention rules

The Ontario Ministry of the Environment will continue to enforce its ban against the dumping of treated or untreated sewage from pleasure boats into provincial waters.

As of June 1, 1969, all toilet-equipped pleasure craft have had to also be equipped with holding tanks or incineration systems. The macerator/chlorinator has been banned from use by pleasure craft in Ontario waters since June 1, 1971.

The Ontario regulations prohibit the overboard discharge and require adequate shore-based pump-out facilities. Violators of the pleasure craft regulation are subject to prosecution by means of a summary conviction ticket issued by the inspecting officer.

Visiting pleasure craft, equipped in accordance with former state regulations requiring either sewage holding or incineration systems, will be considered to comply with the Ontario regulations provided such systems are operable.

All other visiting pleasure boats, including those which are foreign-owned but maintained in Ontario, must be equipped to comply in all respects with the Ontario regulations.

The province accepts adequate flow-through systems on large vessels as an immediate interim solution. However, Ontario has strongly urged the federal government to activate as soon as possible a program of total containment for commercial vessels.

For a list of pump-out stations located throughout the province contact the local Ministry of the Environment office or write the Ontario Ministry of the Environment, 135 St. Clair Avenue, West, Toronto, Ontario, M4V 1P5.

Boating regulations

1. Sewage in all pleasure craft, including houseboats, must be retained in suitable equipment.
2. Equipment suitable for the purpose of the regulation includes: 1) Retention devices with or without recirculation features which retain all toilet waste for disposal ashore. 2) Incineration devices which reduce to ash all sewage and toilet waste.
3. Suitable equipment shall (1) be non-portable, (2) be constructed of structurally sound material, (3) have adequate capacity for expected use, (4) be properly installed, and (5) in the case of storage devices, be equipped with the necessary pipes and fittings conveniently located for pump-out by shore-based facilities. (Although not specified, a pump-out deck fitting with 1½ inch National Pipe Thread (NPT) is commonly used.)

Mississippi development study

During the summer of 1976, Mississippi Lake and its surrounding land areas will be the subject of a development study involving the Ministries of the Environment, Natural Resources, Housing, Industry and Tourism, the Lanark, Leeds and Grenville Health Unit and the Mississippi Valley Conservation Authority.

The main purpose of the study is to recommend what development should take place in the area in the future and what would be the best locations. This should ensure that users of the lake whether they be cottagers, campers or tourists will have a high quality recreational area.

Each of the participating government bodies or agencies will examine the various aspects of existing development around the lake.

The Ministry of the Environment, using a mobile lab, will undertake intensive bacteriological studies of the lake, its tributaries and drainage basin.

Working with the health unit, the Ministry will also inspect private waste disposal facilities and dry wells. Arrangements will be made to correct faulty systems.

The Ministry of Natural Resources will deal with the weed problem, wildlife and fisheries management, water fowl, hunting, sanctuaries, parks and public access.

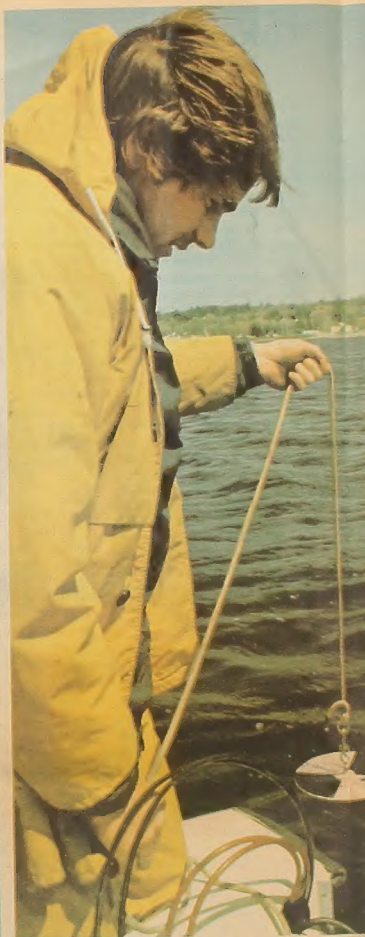
While the Ministry of Housing works closely with the local townships to adopt bylaws to control future development, Industry and Tourism will conduct a survey of tourism needs for the area.

The Mississippi Valley Conservation Authority will study existing lake use and intensity of use by boats. This will include a tabulation of the number of boats per cottage, access points and mannaas. The authority will also continue its floodplain mapping program to determine the number of cottages in the floodplain and the total extent of that area around the lake.

A public hearing was held in April so that concerned groups, individuals, municipalities and planning boards could voice their opinions on the water quality, recreation and development on Mississippi Lake and have an input into the study before it officially got underway. Throughout the study, consultation will be maintained with the appropriate municipalities and planning boards.

The final composite report should be available by March 31, 1977.

Water sampling: the business of ensuring our pleasure



At left: Mike uses sensitive apparatus to take readings of temperature and levels of dissolved oxygen from the depths of the bay



It was an ideal day to be out on the waters of Georgian Bay in the Midland area but the activity couldn't be called recreational boating. Environment Ontario biologists Glenn Robinson and Mike Jackson traded fishing rods and water skis for sample bottles and testing equipment as they conducted routine monitoring for the Ministry's water resources branch. Monitoring included the same procedures carried out by Ontario cottagers and shoreline residents who participate in the Ministry of the Environment's self-help program. Using equipment supplied by the Ministry these people conduct simple water quality tests to monitor nutrient loading in their lake which directly affects algae growth and, therefore, water clarity. One of these tests involves the measurement of water transparency using a simple device called a Secchi disc (left). The disc is lowered into the water on a graduated line until the markings disappear. The depth at which the disc just disappears can be used to calculate the extent of light penetration in a lake and hence the depth to which algae grow. This area is called the euphotic zone. From this zone a composite water sample is taken and magnesium carbonate is added (bottom right) to help preserve the sample and to aid in the separation of chlorophyll *a*. The sample is transported to Environment Ontario's laboratory facilities in Toronto. Here chlorophyll analysis provides a rough indication of the quantity of algae present in the lake. Together with Secchi disc readings, this information is used to compile water quality reports which the Ministry issues to interested parties. More than 100 lakes are currently involved in the program.



Above: Glenn prepares to take a bacteriological sample. Below left: Glenn and Mike adjust Van Dorn sampler used to take samples at specific depths. A chemical preservative is added to an algae sample (far left).



Detergents and water: solutions with problems

Would you add fertilizer to your lake to make the weeds and algae grow? Some cottagers do. They use detergents containing phosphates, which act in the same manner as fertilizer does when applied to a garden.

Phosphates were first added to domestic detergents in the 1940s when it was found that combining them with a synthetic soap produced a washing material more effective than previous soaps.

The phosphate builder makes the water more alkaline, so aiding the removal of grease and oil. It also helps remove soil and other fine particles from cloth fibres.

When Canadians first became concerned about the quality of the lakes and rivers in the late 50's and early 60's, scientists found that phosphates would not break down under normal sewage treatment or other bacterial action. It was not biodegradable.

Phosphorus removal facilities have now been added to many sewage treatment plants around the province. But most of Ontario's 250,000 cottages are in unsewered areas and have their own private waste disposal units, such as septic tanks, holding tanks, chemical toilets or privies. Since there is little, if any, provision for phosphate removal, special attention should be given to the selection of detergents with a low phosphate content.

Under the nutrient control provisions of the Canada Water Act, the Phosphorus Concentration Control regulations require that the elemental phosphorus content of "laundry detergents" does not exceed 2.2 per cent by weight, expressed as five per cent.

The Environment Protection Service of Environment Canada regularly samples a large number of laundry detergents and related cleaning compounds for informational purposes and to ensure that the above regulations are being met. The following lists are extracted from the results of these surveys.

It must be noted that since manufacturers can, and do, change their product formulations from time to time, only those products which are clearly advertised as being "phosphate free" should be relied on to be so.

1) The following "laundry detergent" brands were analyzed for phosphorus content and found to be within the "five per cent limit" at time of testing:

ADAMS LOW FOAM	LAUNDREX
AERO	LIQUID SUNSHINE
AJAX	LOW FOAM
ALL	LOW FOAMY
AMAZE	LOW SUDS SPECIAL
AMWAY TRIZYME	MAPLE LEAF (detergent)
AMWAY SA-8 (powder)	MINISUDZ
ARBOR H.D.	McKAGUE LAUNDRY SOAP
ARCTIC POWER	NET-O NON ETIQUETTE
BIO-AD	NOROCOL BLEU H.D.
BLUE	NOROCHEM
BLUBIRD	OMO
BOLD	ONE SHOT
BONIMART	OSTREM H.D.
BOR-A-ZYME	OXYDOL
BRAWN	OZONITE
BREAK	PENNEX
BREEZE	PENSAL XX
CHEER	PIERCE
CLARENCE	PLAY H.D.
COPELAND	POLY-COT
CONTROL	POLY-D
CRESLOW	PUNCH
CYCLONE	QUIX
D-3	SANFAX 722
D-60 BLEU	SANY
DAY OFF	SAVON-MAJESTIC
DEMOTEX	SAVON SUPERBE
DETERGENT BLEU H.D.	SKORTEX
DIAPER PURE	STEINBERG LO SUDS
DOMINO BLUE	SOAP BOX
DREFT	STERLING LIQUID LAUNDRY
DRENCH	SUDS
DRIVE	SUDLESS
DUZ	SUPER DRIVE
ECHO WASH	SURF
FAB	TALLY
H & C H.D.	3D
H.L.D.	THREE STAR
HEP	TIDE
I.G.A.	VAL-U
INDAL	V.I.P.
INDETTE	VERSAL
JAVEX (detergent)	WHITE MAGIC
L.D. 500	WOOD #1
L.D. 250	WOODWARDS H.D.
L.L. 209	WOODWARDS WASH LABEL
LASCO BUILT	XLF #5
LAUD	ZERO (powder)
LAUNDERALL	
LAUNDRENE	

2) Samples of the following "laundry detergent" brands were found to contain less than one per cent P_2O_5 , or "no phosphate", at time of testing:

AMBER	OLYMPIC
AMWAY KOOL WASH (liquid)	PENSAL H.D.
ARCTIC SOAP FLAKES	PLAZA
AMWAY SA-8 (liquid)	PORTUGUESA
AMWAY L.O.C.	POWER PLUS
ARLAC	PROVIGO BLUE
	PURE GOLD
BESTLINE B-70	QUEBEC BLEU
BORAX	
BRIGHT MONDAY	
BILTRITE	REVIVE
BYESOL BLUE	RIDDAX
	RINTEX
CARNIVAL	
CO-OP	
CONTROL ("phos-free")	SAIL
CANGUARD	SAVOLITE PURE SOAP
CLARIX	SAVON MAJESTIC H.D. BLEU
	SEARS H.D.
ENGRIME	SOMETHIN ELSE
EXPLORE	SPARKETTE
FORMA	STEINBERG BLUE
H & C L.D.	STEINBERG WHITE
INSTANT FELS	TERGEX
IVORY LIQUID	THAMES VALLEY SOAP
IVORY SNOW	TOP VALU
JET (powder)	
LAVADIERA	VISPO
LAUNDET	VOUCH
LOBLAWS BLUE	VITEX
LOSUDZ	
LUX	WIPEX
	WISK
MIRA-MART	WHITE & BRIGHT
	WHITEX
NELCO	WOODWARDS PURE SOAP
NET-O TOUT USAGE	WOOLITE (powder)
NEW	WOOLITE (liquid)
NOROCOL BLANC	
NUTRI CLEAN CLC	ZERO (liquid)

3) The following products are primarily advertised as brand dishwashing compounds. Virtually all of these products are less than 1 per cent P_2O_5 or "phosphate free".

AHOY	NEO-SOL
BEAM (liquid)	PALMOLIVE
BERNIES SUDS	PINK FOAM
BERNAL	POWER PLUS (liquid)
CHARM	PRAIRIE ROSE
CINDY	PRISM
CREST	PRENTICE
DEBBIE	RAPID
DOMINO (liquid)	SAIL (liquid)
DOO	San-O-GLEEM
DOVE	SEARS Lemon Lotion
DUCHESS	SEARS White Velvet
	SEARS Blue Liquid
EMPIRE	SOBEYS
FEATURE	SOFT LAV
	STEINBERG (liquid)
GENTLE FELS	SWAN
GLEE	SWEETHEART Pink
GREER	SWEETHEART Lime
INSTANT SUDS	TREND
	THRIFT
JET (liquid)	
JOY	U-TO (liquid)
MAGIC WHITE V.I.P. 20	VEL
MIR	VITSYN

4) In addition to regular laundry and "fine fabric" products, automatic or machine dishwashing and specialty compounds are becoming increasingly available. At present these automatic dishwasher and special purpose compounds are not regulated for phosphorus. Consequently, not only does phosphorus content vary considerably from brand to brand, it is also frequently very high in comparison to regulated compounds. Of more than 50 different brands of special purpose, bulk industrial and automatic or machine dishwasher compounds tested to date, very few contained 2.2 per cent elemental phosphorus five per cent P_2O_5 or less at time of testing. The majority contained considerably more phosphorus in amounts ranging up to 45 per cent P_2O_5 .

Pesticides

By JOHN STEELE
Information Services Branch

The ideal pesticide is one which is highly effective against the target pest but at the same time safe for all other life forms. It should break down, within a reasonable period of time, into harmless products. At the same time, it should be easy to apply, harmless to people, animals and equipment, and economical.

GARDENS

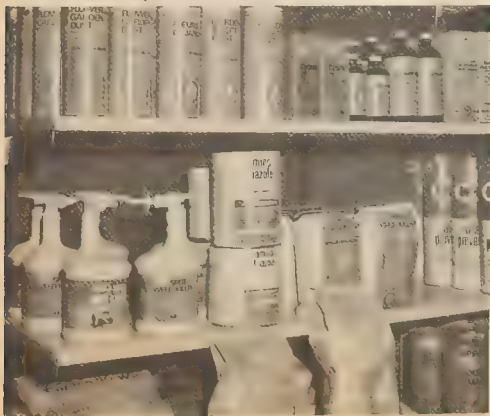
The farmer is not the only person troubled with pests. Pests, whether they be of the weed variety or appear as tiny insects, trouble the small gardener as well as the large farmer.

Good home gardens are not just the result of luck, although a green thumb never hurt anyone's chances of growing a good garden. Healthy, productive gardens are developed through the skillful use of proper soils, fertilizers, knowledge about climatic conditions and, of course, the proper and safe use of pesticides.

Hoing your garden is an excellent, although time-consuming method of ridding your garden of weeds. Pesticides are available that will assist you in your attempt to cultivate an almost weedless garden. For advice on weed control products, contact your local garden supply shop or your local Ministry of the Environment or Ministry of Agriculture and Food.

BENEFICIAL INSECTS

The big problem is how to distinguish the good bugs from the bad bugs. Unless you are an entomologist, this could present some problems. A careful investigation of library research material might be the answer. Many government agencies can assist you in identifying insects. What about universities and their collection of experts? Environment Ontario offers a unique service for the public. Catch an insect in a small bottle, being careful not to damage it, and send it to the pesticides control section in Toronto. Staff experts will attempt to identify the creature and they'll even assess the little creature's worth or lack of it for you.



LAWNS

A thick, green, weed-free lawn is the hope and ambition of many a homeowner. One of the big problems, however, is the invasion of weeds from adjoining property or weed seeds that are an unwanted bonus when you purchase top-dressing material.

Many Ontario lawns become an oasis of yellow-flowered dandelions with the occasional clump of green grass showing in between. The dandelion can be easily controlled by the use of the chemical 2,4-D or any 2,4-D mixtures. For those who fear chemicals or who are workaholics, you can dig out the individual plants with a knife, but be sure to remove the entire plant including the taproot or the remaining root will produce two or three new plants where there was only one before.

Experienced gardeners claim that there are as many jokes in their profession about crab grass as there are about farmers' daughters in the sales business. In Ontario there are two types of crab grass found in lawns: large crab grass and smooth crab grass. Both are annual and reproduce from one seed. Crab grass is difficult to cope with because it lies close to the ground.

Both kinds of crab grass are found where the turf is thin and where there is much sunlight. Elementary measures such as mowing with the mower set high, adequate water and the use of fertilizers to improve turf, will do much to eliminate this unwanted grass.

The list of weeds that could invade your lawn is almost endless. For further information on these weeds, contact the local office of the Ministry of Agriculture and Food and ask for their publication entitled WEED CONTROL IN LAWNS. It includes diagrams and information on identification and control of many common lawn weeds.

MOSQUITOES

In 1975, a type of encephalitis spread by certain mosquitoes occurred in Ontario for the first time. There were about 70 cases, mostly in southwestern Ontario.



The mosquitoes, which get the virus from certain birds, breed faster than usual in a combination of hot sun and rain. It could happen again, so doctors and scientists are watching for it and anti-mosquito programs are underway.

Although government mosquito programs are being developed, the individual can help by doing the following things:

- Eliminate all standing water around the house if possible
- Change water in wading pools or bird baths every week
- Keep water from pooling on the surface of pool covers or other similar plastic coverings
- Filter and chlorinate swimming pools carefully so mosquito larvae cannot develop.
- Reduce the amount of vegetation through mowing weeds and grass, trimming hedges and removing unnecessary shrubbery and trees which protect the adult mosquito against sun and wind.

For personal protection against mosquitoes the following precautions should be taken.

- Restrict outdoor activity in the evening when mosquitoes are most active
- Repair the holes in windows or door screens and make sure the screens are tight
- Close the damper on your fireplace when not in use
- If you are working or visiting in areas where mosquitoes are abundant, wear loose protective clothing
- Lighter colored clothing is less attractive to mosquitoes than dark clothing
- Use repellents, but always follow the instructions.

OTHER PESTS

Black flies, although annoying, are less of a problem than mosquitoes. The black fly period usually lasts from late May to early June and the insects are bothersome only during the day. During the peak period of black fly infestation it is advisable to wear clothing that protects the entire body such as long-sleeve shirts and long pants. Many repellents are available to deter the insect from biting.

The house mouse can invade your cottage or home at will. A nocturnal animal, this rodent can often be detected after dark, creeping around your abode in search of food. To defeat this tiny intruder it is advised that homeowners practise good housekeeping and store both food and waste safely. One of the best ways of capturing the house mouse is to use a spring trap. For people who have a large infestation of these rodents, it is advised that one of many rodenticides be used in controlling the problem. These chemicals are available in many hardware stores and garden shops.

PESTICIDE SAFETY

When purchasing a pesticide, check the label to find out if the pest you want to eliminate is listed. Read the directions to be sure you can safely use it at home.

Storing pesticides properly in the home is important, especially if you have children. Keep all pesticides away from children; under lock and key if you have to. Never store a pesticide near food or where it could get mixed with cleaning supplies, other household items or medicines. Always store the chemical in its original container with its label intact. A chemical in another container or one that has lost its label is a liability and it should be disposed of at once.

Before using a pesticide read the label and follow the directions carefully. Banish all pets and their food and water dishes while using a pesticide in a room. When spraying shelves or closets remove all dishes and other items before spraying and never spray at foods. Never smoke when spraying a pesticide and don't combine different pesticides. Young children should never help you in your pesticide operation.

In case of an emergency (like a child accidentally swallowing some of the pesticide) you should administer first aid as directed on the pesticide container and call your doctor. When taking a person to the hospital because of this type of poisoning, bring the container with you. This will greatly assist the doctors in search of an antidote. Many Ontario cities have poison control centres. Find out the number of such a centre and have it posted somewhere near the phone.



Aids fishing, access to property

Weed harvest cleans shoreline

By SHARON PAUL
Humber College

Environment Ontario is harvesting weeds.

Initiated in 1973 as an experimental project in Buckhorn and Chemung Lakes in the Kawarths, the project has been so successful for the past three summers that it is being continued in 1976.

Its purpose is to rid the shoreline of nuisance weed growth, both to aid fishing and to provide access to the shoreline properties. Administered jointly by Environment Ontario and the Ministry of Natural Resources, the project also studies the effects of removing large quantities of vegetation and determines the feasibility of weed harvesting for large scale use in areas where problems are caused by excessive plant growth in our recreational lakes.

The 1976 Plant Control Program, to harvest about 1150 acres this year is based on a report prepared by a sub-committee of the intergovernmental committee CORTS (Canada - Ontario-Rideau-Trent-Severn).

The contract was awarded to the lowest bidder, Limnos Ltd. of Toronto, which has been involved in the project for the past two years and intends to begin harvesting June 1.

Harvesting is done with two machines specially designed for the purpose. The weeds are cut, then transferred to a hopper by means of a conveyor belt. A second conveyor belt moves them to a barge which

can handle two tons of weeds at a time. A new and bigger machine, 70 feet long and 16 feet wide, has recently been purchased by Limnos Ltd. and is now being rebuilt for use in the Kawarths. If it proves successful, it could further reduce the cost of the project, which this year is estimated to be about \$160,000.

OTHER TECHNIQUES

Controlled water level fluctuation and chemical treatment, the two alternatives to weed harvesting, are used extensively in the Tennessee Valley, where the Tennessee Valley Authority chemically treats up to 8,000 acres annually. Both of these alternatives, however, have been rejected for use in the Kawarths because of differences in climate and possible side effects.

Controlled water level fluctuation, or "draw-down", will work only where sediments can be exposed and completely dried out, and has no effect in controlling weeds produced by seeds. Because late fall drying is not reliable in our climate, the draw-down method of removal must involve the freezing of the root system of the plants, and there is little definite evidence that freezing will control milfoil.

Chemical treatment, while effective in the control of weeds, may have adverse side effects such as low oxygen, fish kills and increased algae growth. Because of these drawbacks, use of chemicals for weed control is restricted to some navigation channels where there is little

possibility of environmental damage and selected nearshore areas. Cottage owners who wish to apply chemicals to the vegetation near the shoreline are reminded that they must do so under the regulations administered by the Ministry of the Environment's pesticides control section.

"Harvesting is a much more controllable technique", says Dr. Tom Brydges, head of the Ministry's limnology and toxicity unit. He adds that decreased weed production and shifts in species composition occur slowly, "but at the end of last summer there was a general feeling that the plant growth was gradually slowing down".

HARVESTED MATERIAL

In addition to removing the excess vegetation, the program will provide more information on the long-term effects of harvesting, attempt to develop cost-cutting methods to make the process more competitive with chemical treatment, and test methods of recycling harvested material into usable products.

For the past three years the collected vegetation has been delivered to local farmers for use as a soil conditioner, and this year plans have been made to use the weeds as food for the sheep raised in the area.

The major objection to mechanical harvesting is cost, which ranges from \$120 to \$150 per acre, compared to \$100 per acre for chemical treatment. Environmental advantages of this method as well as potential uses of the vegetation produced, offset the greater cost. Also, it is hoped that costs can be reduced through improved engineering design and techniques.

Although aquatic weeds and shoreline growth are viewed only as nuisances by the owners of lakeshore properties, the policy of Environment Ontario is to control growth, not eliminate it.

BENEFICIAL WEEDS

"God and nature do nothing

uselessly", wrote Aristotle 2300 years ago, and cottage owners would do well to heed his advice before attempting to remove these aquatic plants. While an overabundance can interfere with swimming, foul boat propellers and snarl fishing lines, lake weeds in moderation are surprisingly beneficial.

Over 150 species of water plants flourish in Ontario, each important as a link in the aquatic food chain, converting chemical nutrients in the water and soil into food for other kinds of life.

Not only are our game fish dependent upon these plants for their food but for their shelter as well; experienced fishermen know that fishing is best at the edge of weed beds. Northern pike spawn in marshy areas and bass and sunfish depend on the protective cover provided by submerged plants.

Seeds, tubers and vegetative parts are important to waterfowl, both as food and for the shelter they offer. Bulrushes, sago pondweed and wild celery are especially valuable and are often planted for this purpose. Bulrushes and other emergent plants are a source of shelter for broods of ducks, and the demise of aquatic plants is soon followed by the decline of waterfowl and fur bears.

Advantages of aquatic plants are not confined to their nutritional value. By breaking the force of the waves against the water's edge, they protect the shoreline and prevent its erosion. In fact, when milfoil was eliminated by disease in Chesapeake Bay, the result was high turbidity, destroying the oyster beds and endangering waterfowl and fishing. Because of this, there is now a proposal to re-establish milfoil in the area.

By absorbing phosphates and nitrates, aquatic plants contribute to the water purification process; their release of oxygen also aerates the water, benefiting its many inhabitants. These processes have the additional advantage of enhancing the taste and odor of our lakes.



This is one of two machines involved in the mechanical harvesting program expected to cost \$160,000 this year.

Animals on weed diet

In a quiet building on the sprawling campus of the University of Guelph, there are cattle, sheep, chickens and ducks who lead a very special life.

It's not because they're under the scrutiny of scientists — that's common for experimental animals. What makes them special is their diet — they've been fed by a lake more than 100 miles away.

Last summer more than 16,000 pounds of the aquatic weed milfoil were trucked from two lakes north of Peterborough to be converted into animal food supplement. The diet was administered in 8 to 12 week experiments measuring such things as

digestibility and growth — questions of, will the animals eat it? and will they thrive on it?

Spokesmen say the results have been encouraging.

The weed utilization study is tied to a plan by the Ontario Ministry of the Environment to harvest each summer about 850 acres of troublesome weeds in lakes Chemung and Buckhorn north of Peterborough.

This summer that figure will rise to more than 1100 acres as Environment Ontario begins its fourth summer of weed harvesting. Contracted for the harvesting program and utilization study for the third year is Limnos Ltd., a Toronto firm which specializes in finding solu-

tions to lake water problems.

For Limnos' manager John Neil, the problem is not just weeds, but what to do with them once harvested.

"It's truly an interdisciplinary study," said Mr. Neil. "When you're tackling problems such as high water content in the animal silage studies, you need expertise in engineering, horticulture and animal nutrition."

The utilization study includes further development of aquatic weeds used for composting. The experimentation is conducted in a 40 foot high-efficiency composter and this year will see the addition of corrugated paper to better achieve the required nitrogen-carbon balance.



Limnos' manager John Neil (standing) and lab technician inspect sheep on aquatic plant diet.

Aquatic Plants

Not all of the aquatic growth in front of your cottage can be considered useless weeds. Much of it is beneficial to fish and wildlife. The following explains some of the advantages of these so-called weeds.

ARROW ARUM:

Seeds eaten by wildfowl; rarely eaten by muskrats.

BAYBERRY:

Excellent food for song birds, and game birds as well as for shelter.

BULRUSH:

Ducks eat nutlets and tubers; geese eat root-stock and herbage; attracts marsh birds, song birds, muskrats; good fish food, cover and nesting.

CATTAIL:

A fair goose food; eaten by muskrats; attracts marsh birds, song birds and wildfowl.

CORDGRASS:

Locally important as wildfowl food; wild ponies eat tender shoots of some species.

DUCK POTATO:

Waterfowl eat tubers and nutlets; porcupine, beaver and muskrats eat roots and tubers; attracts marsh birds, song birds and wildfowl.

MALLOWS:

Valuable to ducks and bobwhite.

PICKEREL WEED:

Generally attractive to ducks.

PONDWEED:

Often a favorite and attractive to wildfowl, marsh and shore birds, muskrats, beaver and deer.

RUSH:

Used by and attractive to wildfowl and upland game birds and song birds; spawning grounds for Rock Bass, Bluegills, and other sunfish.



Cattail

SMARTWEED:

Often important to wildfowl, upland game birds, shore birds, and song birds for the nutlets; eaten by deer in summer.

TAPEGRASS:

Excellent wildfowl food, all parts eaten especially winter buds and root-stock. Attracts wildfowl, shore birds and marsh birds. Valuable fish food as well as for shade and shelter.

WATER MILFOIL:

Many wildfowl eat fruits, some eat foliage, sparingly eaten by muskrat. Also a fish shelter and a valuable food producer.

WIDGEON GRASS:

Important as a duck food within a restricted range.

WILD RICE:

Very important to wildfowl; among most valuable of the grasses; grains and other parts eaten; attracts song birds, game birds, muskrats and deer.

YELLOW WATER LILY:

Waterfowl eat seeds, deer eat leaves, stems and flowers; heavily eaten by muskrats; shade and shelter for fish.



Milfoil

Glen Hall

Tales of a long distance lockmaster

There's no salt water in Ontario's Trent-Severn waterway, but there are plenty of salty dogs.

People familiar with the nearly century-old canal that links Port Severn on Georgian Bay with Trenton on Lake Ontario will tell you there's more than one colorful lockmaster along the 245 mile route.

One of them is 51-year-old Glen Hall at lock 32 in Bobcaygeon. Glen won't admit to being colorful. He says he's just doing his job.

"If I'm well-known at all it's because I'm one of the world's greatest talkers," says Glen. "My wife can't understand me, she says 'What do you have to talk about all day?' I say, 'Everyone's got something different to talk about.'"

And for Glen there's no shortage of people.

Last summer Glen and his staff of two locked more than 9000 boats ranging from 80-foot yachts to five-horsepower runabouts through Bobcaygeon, one of the busiest locks of the 43 on the waterway.

The 1975 traffic was down 4000 from the previous year, as Glen says, because of higher gasoline prices and the newly-instituted canal tolls.

"I hear a few boaters griping about the tolls," says Glen. "But what the heck, for years taxpayers subsidized these guys. Why should people pay if they don't even own a boat!"

"Boaters are no different from anybody else. They like to complain. They talk about the weeds in the lakes around here when the problem's not really that bad. And a few years ago they were crying because the province said no sewage from boats could go into the lakes and they were forced to spend a few bucks on their boats. Now they're saying it's the best thing that ever happened."

But with the increase in weekend boating much of Glen's conversation is with nervous, inexperienced boaters:

"If you want to see things you've never seen before, come by a lock on a busy weekend," quips Glen. "You'll see people who rent these enormous houseboats who have no idea what they're doing or how to go through a lock. The spectators lined-up on the edge of the lock just make them more nervous."

"When you back it up and hit a dock a few times, you won't worry about a few little



"Tell me again," says Glen, "which cabin cruiser is yours?"

scratches," Glen once said to a nervous Brian Glennie of the Toronto Maple Leaf hockey team piloting a brand new mahogany boat. In the turbulence of 250,000 gallons of water filling the lock in less than three minutes, the trick is securing your craft and warding-off other boats.

"When you're down in a lock, the biggest risk is fire," Glen says. "There's just no place to go. If boaters using the locks remember anything it should be to put out cigarettes and shut off the ignition when they're coming through."

In addition to locking boats, Glen is responsible for the maintenance and upkeep of the area grounds including a small park complete with picnic tables. Many boaters tie up overnight and pitch a

tent on the grounds and others come by car to spend the day.

Visitors often include staff from the Peterborough district office of the Ontario Ministry of the Environment. On weekends they patrol area rivers, lakes and canals enforcing the provincial regulation for total sewage retention on watercraft.

The Ministry's Bruce Hancock says Glen doesn't take an official role in his boat inspection but does supply a fundamental service during family business/pleasure trips to Bobcaygeon: Glen would often change the diaper of the youngest Hancock in his office.

"When you're as busy as I am," quips Glen, "answering all sorts of questions — a change is as good as a rest!"

Lake sampling program

Ontario is blessed with over 250,000 lakes. So it's not surprising that water sports, swimming, boating and fishing are very popular forms of recreation. Nor is it surprising that many cottages have been built along the shores of these lakes — sometimes even entire colonies of cottages.

Unfortunately, through misuse and carelessness, lakes can become polluted and their recreational use limited. The Ministry of the Environment is concerned and devotes several summer programs solely to water quality and cottage pollution.

One program involves a sanitary survey of cottages and other establishments on lakes to detect and correct faulty sewage disposal systems leaking into the lake. If a cottage is identified as a pollution source, an Environment Ontario staff member will discuss the corrections required with the owner and obtain a firm commitment from him to have recommended abatement measures carried out within a reasonable length of time.

Under Section VII of the Environmental Protection Act, a cottage can be fined up to \$1,000 for refusing to obey an abatement order. However, most cottagers are very co-operative and since the program began in 1970, only six cottagers have been convicted.

The following are some of the water quality programs which the Ministry of the Environment carried out last year and which it plans to conduct this year in the major recreational areas of the province:

NORTHWESTERN ONTARIO

1976 Sampling

Six summer students will survey the private sewage disposal systems at more than 700 cottages on the Shebandowan Lakes — Upper, Middle and Lower — located about 50 miles northwest of Thunder Bay.

Environment Ontario staff will also follow up on the work begun last summer on the Lake of the Woods and Rainy Lake.

1975 Sampling

Last summer, students from the Thunder Bay office surveyed 713 cottages on Sunrise, Trout, Loon and Oliver Lakes plus parts of the Lake Superior shoreline between

Ishkibbe Beach and Wildgoose Point.

Of the private sewage disposal systems inspected on these lakes 272 were found to be satisfactory. A further 117 were seriously substandard (in a state of neglect and potentially hazardous) and 117 were nuisances (wash water and/or solid waste directly escaping onto ground surface). A total of 58 were found to be direct polluters, a situation where sewage is contaminating the ground water or reaching the lake either by direct discharge through a pipe or ditch or over the ground surface. A final 159 were unable to be classified due to owner absenteeism or classification complexities.

All cottages with systems classified as nuisances or direct polluters were requested to take corrective action. Some cottages have already corrected their systems while many others have signed agreements to carry out abatement procedures this summer. A small percentage are still being interviewed by Ministry staff and corrective action will be decided upon at that time.

NORTHEASTERN REGION

1976 Sampling

Through the Cottage Pollution Program the following lakes will be surveyed: McCarroll, Cloudy, Diamond, Bright, Red Rock, Big Basswood, part of Wahnapiat, Seskenika, Kamiskotia, Little Star, Keefer, Kapikog, Shebeshehong, west end of Lake Nipissing and the French River at Lake Nipissing.

1975 Sampling

Approximately 2,000 residences and disposal systems were checked on Nosbonsing, Nipissing, Manitouwabing, Healy and Wahwashkesh Lakes (North Bay area), 48 on Capreol (Sudbury), 126 on Nellie and Kenogami Lakes (Timmins), and 347 on Aweres, Upper Island, Lower Island, Trout and Dunlop Lakes (Sault Ste. Marie area).

The results of these surveys showed that there were approximately 500 inadequate systems in the North Bay area, eight in the vicinity of Sudbury, one in Timmins and 47 in the Sault Ste. Marie area.

Measures are being taken for their correction.

CENTRAL ONTARIO

1976 Sampling

This summer private sewage disposal systems will be inspected on eight lakes: Loon, Turtle, Ril and Muldrew in the District Municipality of Muskoka, Lake St. John in Simcoe County, and Methuen, Kasshabog and Oak Lakes in Peterborough County.

1975 Sampling

Staff from the Peterborough office surveyed cottages on Canal, Mitchell and Dalrymple Lakes. Of the 1,427 sewage disposal systems inspected, 19.4 per cent were found satisfactory, 44.9 per cent were seriously substandard, 25.6 per cent were nuisances, 7.4 per cent were direct polluters and a final 2.7 per cent were unable to be classified.

Staff from the Gravenhurst office checked 1,448 disposal systems on Bala Bay, Dark, Silver, Gull and Three mile Lakes in the District Municipality of Muskoka and Gull Lake in the County of Haliburton. They found 36 per cent to be satisfactory, 21 per cent seriously substandard, 35 per cent nuisances, one per cent polluters and seven per cent unclassified.

All cottages with systems classified as nuisances or direct polluters were requested to take corrective action.

SOUTHEASTERN ONTARIO

In this region, Environment Ontario staff are working with the Ministry of Natural Resources to carry out water quality studies. The lakes are selected for study by a regional inter-Ministry committee on the basis of the pressures for development; reports of deteriorating water quality from individuals or cottage associations and the importance of the maintenance of sport fisheries.

Throughout the spring, summer and fall, water samples are taken from each of the lakes to measure the algae content and for chemical analyses; water clarity is measured; temperature and dissolved oxygen

readings are recorded and sediment samples taken.

Based on this data and knowing the drainage basin and lake characteristics, it is possible to evaluate a lake's probable capacity for development.

It is only in recent years that data on water quality has been collected on recreational lakes. Thus there is no scientific history of water quality trends over a long period of time. The studies now being conducted will form the basis for future studies and will indicate whether the water quality is being maintained.

1976 Sampling

The surveys will involve the following lakes: Stubbs, Charlotte, Clear and Wadsworth in Renfrew County; St. Peter and Lavelle in North Hastings; Dickey, Freen, Thanet, Tanamong, Whestone and Grimsthorpe in South Hastings; Ashby, Barker, King, Ashden, Effingham, Merrill, Long Mallory and Pringle in the County of Lennox-Addington; Fortune, Lucky, Mackie, Mosque, Wensley, Reid, Big Ohlman, Round Schooner, Long Schooner, Grindstone, Buckshot, Canotto, Mair, Shabomoka, Kashwakamak, Marble, Mississagapon, Shawenegog, Kishkebas, Ardoh, Malcolm, Fawn, Coxdale, Plevna, Hungry, Kennebec, White, Thirty Island, Draper and LaBelle in Frontenac.

The analyses of the data from these surveys should be completed by the spring of '77.

1975 Sampling

The results of the data collected in 1975 are still being analysed. A report, which will be issued in the fall of '76, will indicate the lakes sensitive to development and will recommend what action should be taken where water quality is concerned. The following lakes were surveyed in 1975: Clear, Loughborough, Buck, Desert, Devil, Sharbot Upper Rideau, Big Rideau, Charlestown, Canoe, Birch, Knowlton, Indian, Otter, Crow, Farren, Big Crosby, Sand (Westport), Bennett, Dalhousie, Mississippi, Pike, Fourteen Island, Thirteen Island, Bobs, Beaver, Skootmatta, Clarendon, Wolfe, Christie, Opinicton, Sand Lake, Redhorse, Black, Silver, Big Clear, Fifth Depot, Otty, White, Dog, Eagle, Singleton, Bull, Buck, Lower Beverly, Cross, Clayton and Troy.

Environment Ontario Newspaper awards

The Ministry of the Environment recently resumed sponsorship of the Ontario Environmental Award, an award for Ontario weekly newspapers in recognition of outstanding achievement in environmental journalism. Rick McCutcheon, left, displays the 1976 award won by the Manitoulin Expositor. An honorable mention went to the Nepean Clarion, represented here by Rick Blanchard.



Solid waste seminar

Municipal refuse vital energy source

Energy production and refuse derived fuel are the best bets in today's circumstances for economical processing and reclamation of municipal garbage, G. C. Chisamore told 250 people at a seminar on solid waste handling and resource recovery, April 1.

Mr. Chisamore, manager of program development in the Ontario Ministry of the Environment's resource recovery branch, was one of 10 speakers at the seminar

sponsored jointly by the Pollution Control Association of Ontario and the Ministry in Toronto.

He said that handling and disposal of municipal waste now costs the people of Ontario about \$70,000,000 a year. Citing preliminary results from an Ontario Research Foundation study commissioned by the Ministry, he said that refuse-derived fuels have good potential for use in the cement industry and in large boiler operations such as thermal

generating plants and major industrial installations.

The production of fuel, in addition to the reclamation of some material such as paper and metal, can substantially reduce and reclaim the costs involved in building and operating the major capital facilities involved in resource recovery, he said.

Eric Sanderson, senior environmental consultant for SNC - GECO Consultants Ltd., stressed that markets for the products of resource recovery must be developed

progressively and that fluctuating demand and prices should be expected during the period of development.

He said the Ministry of the Environment's resource recovery program is the most promising approach to date for full development of waste reclamation's potential benefits. He mentioned specifically the Ministry's experimental plant for resource recovery which is now under construction in Downsview: "The only way to have a real evaluation of markets for

recovered waste is to have samples of the goods available."

Peter Maclean, president of M and T Products of Canada Ltd., presented a film outlining his company's approach to resource recovery. He stressed the need for well-developed, stable markets for waste-derived products and said that private companies were best qualified to perform successfully in meeting the challenges involved.

Courses

Basic Sewage Treatment Operation. This course is designed primarily for operators-in-training and to increase the efficiency of wastewater treatment plant operators. For operators only. Dates: October 25-29. Capacity: 40. *Applications must be submitted before August 15.*

Basic Water Treatment Operation. This course is designed primarily for operators-in-training and to increase the efficiency of water treatment plant operators. For operators only. Dates: November 1-5. Capacity: 40. *Applications must be received prior to September 15.*

Activated Sludge Workshop. This workshop will increase the efficiency of activated sludge treatment operators at all levels of responsibility. By emphasizing methods of process control, it is specifically directed at an operator employed as, or likely to be promoted to shift foreman, operator-in-charge or chief operator of an activated sludge plant. For operators only. Dates: November 15-19. Capacity: 25. *Applications must be received by September 15.*

Basic Gas Chlorination. This workshop will familiarize the new or inexperienced operator with the operation of various types of chlorination equipment, as well as demonstrate methods of troubleshooting defective units. For operators only. Dates: October 26-29. Capacity: 25. *Applications must be received by August 15.*

Maintenance Gas Fitters. As required by the Energy Act, 1971 and related regulations, this course is designed to certify personnel who operate and maintain the gas system in a wastewater treatment plant. For operators only. Dates: November 22-26. Capacity: 20. *Applications must be received by September 15.*

Industrial Abatement - Air Management, Part II. Divided into three sections, this course will familiarize new personnel with the air management aspect of industrial abatement, and increase the efficiency of provincial officers involved in these duties. For Ministry of the Environment staff only. Dates: October 18-22. Capacity: 30. *Applications must be received prior to August 15.*

Visible Emissions Recertification. The course will train and certify personnel as being proficient in the identification of the capacities of visible emissions. It will also help to prepare the provincial officer for appearance in court as an expert witness. For Ministry of the Environment staff only. Dates: to be determined. *Applications must be received before August 15.*

Pump Operation. This workshop, developed jointly with the Ontario Municipal Engineers' Association, is designed to increase the knowledge and skills of personnel involved in operating and maintaining all forms of pumping and allied equipment. For operators only. Dates: November 15-19. Capacity: 25. *Applications must be received before September 15.*

Acoustics 1. Dates: October 4-8. Capacity: 40. *Applications must be received by August 15.*

Acoustics 2. Dates: November 22-26. Capacity: 40. *Applications must be received by September 15.* The Acoustics courses are divided into four parts and are designed to familiarize personnel with the techniques of practical acoustics required to fulfill the obligations of the municipal noise control officer or of other noise control and abatement agencies. Upon successful completion of the appropriate parts of the course, the trainee will be qualified to perform noise control duties at the level indicated by the certificate awarded.

All of the above courses will be conducted in Toronto. For further information, please contact the Registration Secretary, Training and Certification Section, Personnel Services Branch, 135 St. Clair Avenue, W., Toronto, Ontario, M4V 1P5. Telephone (416) 965-6994.



— d. h. nagata

The handout is from a passenger on the ferry M.S. Chi-Cheemaun which links Tobermory on the Bruce Peninsula with South Baymouth on Manitoulin Island.

Waste Management Advisory Board

Soft drink industry faces regulatory action

Ontario's soft drink retailers and bottlers have not satisfied a Ministry of the Environment request to restore the availability and use of refillable containers for its products, according to a report tabled in the Legislature by Environment Minister George Kerr, March 18th.

The Waste Management Advisory Board, which has monitored the industry's voluntary program since March, 1975, presented Mr. Kerr with a series of recommendations for regulatory action.

The board recommends that one regulation, requiring a ban on non-refillable containers for carbonated soft drinks, could be applied effective April 1, 1979, or held in abeyance on the condition the industry take action within the next three years to meet strict objectives set by Mr. Kerr.

This regulation would prohibit the general sale of soft drinks in non-refillable containers as of April 1, 1979, and ban the machine vending of non-refillables by April 1, 1981.

A second recommendation suggests a regulation requiring retailers to devote at least 50 per cent of retail display space for carbonated soft drinks to refillable containers.

The advisory board also recommends supportive regulations which would require:

- Retail display of contents price, excluding container deposit, as prominently as the full price of identical beverages in non-refillables.
- Retail refund of deposits on containers for any brands and sizes stocked in full and in cash.
- Retail display of a notice outlining the obligations of both retailer and purchaser under the regulations.
- Labelling refillable bottles with the words "money-back bottle."
- Banning metal containers with detachable self-opening devices effective January 1, 1977.
- And finally, prohibiting non-refillables for soft drinks, in the sizes less than eight ounces or 280 milliliters produced mostly for commercial use, effective April 1, 1977.

Mr. Kerr said that a co-operative approach to problem solving has been successful in dealing with many pollution problems in Ontario. "But when co-operation is not forthcoming, then it is necessary to take unilateral action in order to achieve an objective in the public interest."

He said that he will introduce specific legislative proposals based on the board's report in the near future.

Mr. Kerr said he is expecting an advisory board report on milk packaging shortly.

The report on soft drink containers reviewed in detail the direction of the industry's activities over the past decade.

Since March 13, 1975, when the Minister of the Environment called on soft drink bottlers, retailers, manufacturers and distributors to effect a substantial increase in the use of refillables within the industry, the advisory board has monitored progress in meeting this objective.

The report states that carbonated soft drink containers and cartons have contributed some 170,000 tons to Ontario's waste load during the year — about four per cent of municipally collected garbage. More than 1.3 billion bottles and cans were required to deliver the year's production of these beverages and it was found that non-refillables held about 60 per cent of the province's soft drink container market.

With respect to food sales, the board was advised that 69.2 per cent of gallonage sales of carbonated soft drinks were in non-refillable containers. The market share of gallonage sales in refillable containers increased by 2.7 percentage points in 1975 as compared with 1974.

The board also found an increase in the availability of different sizes and brands of soft drinks in refillable containers in retail stores.

The report states this reversal of the trend to non-refillables in the industry is the first since these containers were first introduced in the early 1960s, and that refillable bottles are showing a sustained penetration of the market in family sizes.



But it describes overall results of the one year program as disappointing, with refillable 10-ounce bottles still difficult to buy.

According to the report, the chief difficulty in the availability of refillable containers is the reluctance of most retail chains to stock them, because of handling costs and space limitations. Most retailers have expressed a preference for standard bottles in two sizes of containers to reduce space and handling problems.

The board's survey of soft drink advertising found that only 25 per cent of the 238 advertisements studied in Toronto promoted the sale of soft drinks in refillable bottles. London advertising was similar, with Ottawa the only one of the three cities where refillable containers were promoted more than non-refillables. The board also classed in-store promotion of refillable containers as generally disappointing.

The board found that the proliferation of container sizes and proprietary shapes

and the domination of non-refillables has created problems for the consumer who prefers refillables and wants to return them. "Most retail outlets will not pay container refunds on brands or sizes they do not handle, the report states. "The result is an inefficient system and low trip-rate rates for refillable bottles in the many urban areas which are now dominated by non-refillables. . . . The substantial environmental benefits . . . which can be realized by maximizing the use and reuse of refillable bottles is directly dependent on the existence of a smoothly functioning distribution system."

The report also concludes that the existing system in Ontario, with its orientation to non-refillable containers, cannot provide significant environmental gains without modification.

The advisory board recognizes the vending machine industry's preference for non-refillable cans, because of the greater capacity and easier servicing involved. The

report notes that vending machines account for an estimated five per cent of the Ontario market for containerized soft drinks, with most of these sales in cans. It also notes that about 35 per cent of total vending machine sales was in cans, with bulk sales in paper cup machines accounting for 61 per cent of the market and bottles the balance of three per cent.

The report states that 1972 estimates showed an estimated 1072 production workers in Ontario would be laid-off by an outright ban on non-refillable soft drink containers. It estimates that these layoffs would be increased by

18 per cent over the 1972 figures, if a ban were applied immediately because of the increased production of non-refillables in the past four years. It also quotes a report from the metal container industry that at least one plant would be expected to close with attendant loss of investment in machinery and equipment if there were a major shift to refillable bottles.



Ministry
of the
Environment
Ontario

Hon. George A. Kerr
Minister
Everett Biggs,
Deputy Minister

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People on the move in Environment Ontario...

Mrs. Helen Vanner who is leaving the financial services branch to become director of fiscal resources branch in the Ministry of Health is seen here with Bill Wood, left and Tom Lambert. Mr. Wood is the new director of financial services. Mr. Lambert is the new director of administrative services.